

**FINAL
ENVIRONMENTAL IMPACT STATEMENT
FOR TREATING
TRANSURANIC (TRU)/ALPHA LOW-LEVEL WASTE
AT THE OAK RIDGE NATIONAL LABORATORY
OAK RIDGE, TENNESSEE**



**VOLUME 2
COMMENT RESPONSE DOCUMENT**

June 2000

COVER SHEET

RESPONSIBLE AGENCY: U.S. Department of Energy (DOE)

TITLE: Final Environmental Impact Statement for Treating Transuranic (TRU)/Alpha Low-Level Waste at the Oak Ridge National Laboratory, Oak Ridge, Tennessee (DOE/EIS-0305)

CONTACT: For further information concerning the Final EIS, contact

Dr. Clayton Gist, Waste Management Integration Team Leader
U.S. Department of Energy
Oak Ridge Operations
55 Jefferson Avenue
P.O. Box 2001
Oak Ridge, TN 37831
Telephone: (865) 241-3498 • Facsimile (865) 576-5333 • E-Mail: gistcs@oro.doe.gov

For general information on DOE's National Environmental Policy Act (NEPA) process, contact:

Ms. Carol M. Borgstrom, Director
Office of NEPA Policy and Assistance (EH-42)
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585
Telephone: (202) 586-4600, or leave a message at (800) 472-2756

ABSTRACT: The DOE proposes to construct, operate, and decontaminate/decommission a transuranic (TRU) Waste Treatment Facility in Oak Ridge, Tennessee. The four waste types that would be treated at the proposed facility would be remote-handled TRU mixed waste sludge, liquid low-level waste associated with the sludge, contact-handled TRU/alpha low-level waste solids, and remote-handled TRU/alpha low-level waste solids. The mixed waste sludge and some of the solid waste contain metals regulated under the Resource Conservation and Recovery Act and may be classified as mixed waste.

This document analyzes the potential environmental impacts associated with five alternatives—No Action, the Low-Temperature Drying Alternative (Preferred Alternative), the Vitrification Alternative, the Cementation Alternative, and the Treatment and Waste Storage at Oak Ridge National Laboratory (ORNL) Alternative.

PUBLIC COMMENTS: The Draft environmental impact statement (EIS) was issued to the public for review and comment on March 3, 2000. The public comment period ended on April 17, 2000. All comments were considered in preparation of the Final EIS. The DOE will use the analysis in this Final EIS and prepare a Record of Decision on the treatment of TRU and alpha low-level wastes at ORNL. This decision will be made no sooner than 30 days after the U.S. Environmental Protection Agency (EPA) Notice of Availability of the Final EIS appears in the *Federal Register*.

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ACRONYMS AND ABBREVIATIONS

Note: These acronyms and abbreviations represent a combined list for both Volume 1 and Volume 2. Acronyms and abbreviations may not all be used in each volume. Less familiar acronyms are sometimes redefined within the document to enhance readability for the general public.

AEA	Atomic Energy Act of 1954
ALARA	as low as reasonably achievable
ANS	Advanced Neutron Source
BA	Biological Assessment
CAA	Clean Air Act
CBOD	carbonaceous biochemical oxygen demand
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	<i>Code of Federal Regulations</i>
CH	contact-handled
CRD	Comment Response Document
CX	categorical exclusion
D&D	decontamination and decommissioning
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DOT	U.S. Department of Transportation
DSSI	Diversified Scientific Services, Inc.
EA	environmental assessment
EDE	effective dose equivalent
EHEPA	extreme HEPA
EMWMF	Environmental Management Waste Management Facility
EIS	environmental impact statement
EM	Environmental Management
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act of 1986
ETTP	East Tennessee Technology Park
FFA	Federal Facilities Agreement
Foster Wheeler	Foster Wheeler Environmental Corporation
FR	<i>Federal Register</i>
FSAR	Final Safety Analysis Report
HEME	high-efficiency mist eliminator
HEPA	high-efficiency particulate air
HVAC	heating, ventilation, and air conditioning
ICRP	International Commission on Radiological Protection
ISCST3	Industrial Source Complex Modeling Code, Version 3
INEEL	Idaho National Engineering and Environmental Laboratory
LCF	latent cancer fatality
LDR	Land Disposal Restriction
MVST	Melton Valley Storage Tank
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAPs	National Emission Standards for Hazardous Air Pollutants
NFS	Nuclear Fuel Services
NHPA	National Historic Preservation Act

NPDES	National Pollutant Discharge Elimination System
NRC	Nuclear Regulatory Commission
NTS	Nevada Test Site
ORNL	Oak Ridge National Laboratory
ORO	Oak Ridge Operations
ORR	Oak Ridge Reservation
ORSSAB	Oak Ridge Site Specific Advisory Board
PAAA	Price Anderson Amendment Act
PCB	polychlorinated biphenyl
PCF	probability of cancer fatality
PPE	personal protective equipment
PSD	prevention of significant deterioration
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
Rad-NESHAP	National Emission Standards for Hazardous Air Pollutants for Radionuclides
RCRA	Resource Conservation and Recovery Act
REDC	Radiological Engineering Development Center
RH	remote-handled
RIMS II	Regional Input-Output Modeling System II
ROD	Record of Decision
ROI	Region of Influence
RWP	Radiological Work Permit
SCR	selective catalytic reduction
SS	stainless steel
SWSA	solid waste storage area
SWSA 5 North	Solid Waste Storage Area 5 North
TAAQS	Tennessee Ambient Air Quality Standards
TCLP	Toxicity Characteristic Leaching Procedure
TDEC	Tennessee Department of Environment and Conservation
TEDE	total effective dose equivalent
TMI	Three-mile Island
TPDES	Tennessee Pollutant Discharge Elimination System
TRC	total residual chlorine
TRU	transuranic
TSCA	Toxic Substances Control Act
TSP	total suspended particulates
TVA	Tennessee Valley Authority
UBC	uniform building code
U.S.C.	United States Code
UTS	Universal Treatment Standard
WAC	Waste Acceptance Criteria
WAG	Waste Area Group
WIPP	Waste Isolation Pilot Plant
WM PEIS	<i>Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste (DOE/EIS-0200-F, May 1997)</i>
WIPP SEIS-II	<i>Waste Isolation Pilot Plant Disposal Phase Supplemental Environmental Impact Statement (DOE/EIS-0026-S-2, September 1997)</i>

UNITS OF MEASURE

Bq	becquerel
Bq/g	becquerels per gram
C	Celsius
Ci	curie
Ci/g	curies per gram
cm	centimeter
dBA	decibel
dscf	dry standard cubic foot
dscfm	dry standard cubic feet per minute
F	Fahrenheit
ft	feet
ft ²	square feet
ft ³	cubic feet
gal	gallon
gpd	gallons per day
gpm	gallons per minute
gr/dscf	grains per dry standard cubic foot
Gy/d	gray (absorbed dose, energy) per day
h	hour
ha	hectare
hr	hour
in	inch
km	kilometer
kV	kilovolt
kW	kilowatt
L	liter
lb	pound
lb/ft ³	pounds per cubic foot
lbs/h	pounds per hour
Leq	equivalent sound or noise level
m	meter
m ³	cubic meters
mg/L	milligrams per liter
mph	miles per hour
mrem	millirem (one thousandth of a rem)
mrem/h	millirem per hour
MW	megawatt
nCi/g	nanocuries per gram
ng/L	nanograms per liter
pCi/g	picocuries (one trillionth of a curie) per gram
ppm	parts per million
psig	pounds per square inch gauge
rad/d	rads per day
rem	roentgen equivalent man
rpm	revolutions per minute
wt %	weight percent
µg/m ³	micrograms per cubic meter
µR	microroentgen

Metric Conversion Chart

To Convert From U.S. Customary Into Metric			To Convert From Metric Into U.S. Customary		
If you know	Multiply by	To get	If you know	Multiply by	To get
Length					
inches	2.540	centimeters	centimeters	0.3937	inches
feet	30.48	centimeters	centimeters	0.03281	feet
feet	0.3048	meters	meters	3.281	feet
yards	0.9144	meters	meters	1.094	yards
miles	1.609	kilometers	kilometers	0.6214	miles
Area					
square inches	6.452	square centimeters	square centimeters	0.1550	square inches
square feet	0.09290	square meters	square meters	10.76	square feet
square yards	0.8361	square meters	square meters	1.196	square yards
acres	0.4047	hectares	hectares	2.471	acres
square miles	2.590	square kilometers	square kilometers	0.3861	square miles
Volume					
fluid ounces	29.57	milliliters	milliliters	0.03381	fluid ounces
gallons	3.785	liters	liters	0.2642	gallons
cubic feet	0.02832	cubic meters	cubic meters	35.3	cubic feet
cubic yards	0.7646	cubic meters	cubic meters	1.308	cubic yards
Weight					
ounces	28.35	grams	grams	0.03527	ounces
pounds	0.4536	kilograms	kilograms	2.205	pounds
short tons	0.9072	metric tons	metric tons	1.102	short tons
Temperature					
Fahrenheit (°F)	subtract 32, then multiply by 5/9	Celsius (°C)	Celsius (°C)	multiply by 9/5, then add 32	Fahrenheit (°F)
kelvin (°k)	subtract 273.15	Celsius (°C)	kelvin (°k)	multiply by 9/5, then add 306.15	Fahrenheit (°F)
Note: 1 sievert = 100 rems					

Metric Prefixes

Prefix	Exponent Converted to Whole Numbers	Prefix	Exponent Converted to Whole Numbers
pico	$10^{-12} = 0.000,000,000,001$	deka-	$10^1 = 10$
nano-	$10^{-9} = 0.000,000,001$	hecto-	$10^2 = 100$
micro-	$10^{-6} = 0.000,001$	kilo-	$10^3 = 1,000$
milli	$10^{-3} = 0.001$	mega-	$10^6 = 1,000,000$
centi	$10^{-2} = 0.01$	giga-	$10^9 = 1,000,000,000$
deci-	$10^{-1} = 0.1$	tetra-	$10^{12} = 1,000,000,000,000$
Note: $10^0 = 1$			